REMARKS

Applicants amend Claims 1, 9, 18 and 23-28. Applicants do not cancel or add any new claims. Accordingly, Claims 1-28 are pending.

I. Claims Rejected Under 35 U.S.C. § 112

On appeal, the Patent Office maintained the rejection to Claims 23-25 under 35 U.S.C. 112, first paragraph. Applicants amend Claims 23-25 and respectfully submit that amended Claims 23-25 are supported by the specification. See, for example, the specification at page 8, lines 15-19.

II. Claims Rejected Under 35 U.S.C. §102(b)

The Patent Office rejects Claims 1-4, 7, 9-12, 15, 18, 19 and 26-28 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,159,858 to Kishii, et al. ("Kishii"). Applicants amend Claims 1, 9, 18, 26-28.

Among other elements, amended independent Claim 1 defines a method of removing a particle from a surface of a metal plug comprising, introducing a second agent comprising hydrogen peroxide to rinse the surface of the metal plug, wherein the second agent is introduced through a polisher or sprayed over the surface of the metal plug to drive at least one particle off the surface of the metal plug.

In making the rejection, the Patent Office characterizes Kishii as showing a process of fabricating a semiconductor device wherein the process includes a polishing step followed by a cleaning step. Decision, page 7. The Patent Office finds that "'any residue abrasive remaining in the substrate ...can be removed easily by an acid cleaning process.'" Ibid., citing Kishii Col. 14, lines 53-59. Ishii describes that the acid cleaning process is conducted to dissolve remaining MnO_2 abrasive particles into various acids followed by a scrubbing process. Kishii Col. 9, lines 5-23. The process results in a water-soluble product that "clearly indicates the foregoing acid treatment dissolves the residual MnO_2 particles." Kishii Col. 9, line 26—Col. 10, line 7.

Kishii describes cleaning being done by immersing a test piece into a solution containing hydrogen peroxide which causes a chemical reaction that dissolves MnO_2 into the solution. Applicants understand dissolving, in this instance, to describe at least two chemical compounds being exposed to one another and, through a reaction, results in the MnO_2 being changed from solid form to liquid form and thus no longer adhering to the substrate.

In contrast, Claim 1 defines a method that rinses a metal plug by introducing an agent through a polisher during polishing or spraying a solution over the surface of a metal plug to drive at least one particle from the surface of the metal plug. Applicants respectfully submit that Kishii

does not teach rinsing being done by introducing a solution through a polisher during polishing or spraying a solution of the surface of the metal plug when MnO_2 is dissolved since the dissolution occurs after the test piece has been immersed in a solution. Immersing a test piece into a solution is not the same as introducing the solution during polishing nor is it the same as rinsing being done by spraying the surface.

Moreover, one skilled in the art would conclude that when a particle is dissolved from a surface, it is not driven from that surface since in order to "drive" something off of a surface, application of a force different from dissolution is required. Thus, Kishii describes MnO_2 being dissolved from a substrate, which is different from a particle being driven from the surface of a metal plug by spraying or polishing.

Accordingly, Applicants respectfully request withdrawal of the rejection of independent Claim 1. Claims 2-4 and 6-8 depend from Claim 1 and are not anticipated at least for the same reasons Claim 1. Accordingly, Applicants respectfully request withdrawal of the rejection of Claims 2-4 and 6-8.

Amended independent Claim 9 defines a method comprising rinsing the surface of the metal plug with a solution comprising hydrogen peroxide, wherein rinsing is spraying the solution over the surface of the metal plug to drive at least one particle off the surface of the metal plug similar to Claim 1. The discussion above regarding Kishii's failure to teach similar elements of Claim 1 is equally applicable here. Therefore, claim 9 is not anticipated by Kishii. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 9.

Claims 10-12 and 15 depend from Claim 9 and are allowable at least for the same reasons as Claim 9. Accordingly, Applicants respectfully request withdrawal of the rejection of Claims 10-12 and 15.

Amended independent Claim 18 defines a method comprising rinsing the surface of a conductive plug with a solution comprising hydrogen peroxide, wherein rinsing is spraying the solution over the surface of the conductive plug to drive at least one particle off the surface of the conductive plug similar to Claims 1 and 9. The discussion above regarding Kishii's failure to teach similar elements in Claims 1 and 9 is equally applicable here. Therefore, Claim 18 is not anticipated by Kishii. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 18.

Claim 19 depends from Claim 18 and is allowable at least for the same reasons as Claim 18. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 19.

Amended independent Claim 26 defines a method comprising rinsing the surface of the metal plug with a solution comprising hydrogen peroxide, wherein rinsing is spraying the solution over the surface of the metal plug to drive at least one particle off the surface of the metal plug similar to Claims 1, 9 and 18. The discussion above regarding Kishii's failure to teach similar

elements in Claims 1, 9 and 18 is equally applicable here. Therefore, Claim 26 is not anticipated by Kishii. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 26.

Amended independent Claim 27 defines a method comprising rinsing the surface of the metal plug with a solution comprising hydrogen peroxide, wherein rinsing is spraying the solution over the surface of the metal plug to drive at least one particle off the surface of the metal plug similar to Claims 1, 9, 18 and 26. The discussion above regarding Claims 1, 9, 18 and 26 on a similar limitation is equally applicable here. Therefore, Claim 27 is not anticipated by Kishii. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 27.

Amended independent Claim 28 defines a method comprising rinsing the surface of the metal plug with a solution comprising hydrogen peroxide, wherein rinsing is spraying the solution over the surface of the metal plug to drive at least one particle off the surface of the metal plug similar to Claims 1, 9, 18, 26 and 27. The discussion above regarding Kishii's failure to teach similar elements in Claims 1, 9, 18, 26 and 27 is equally applicable here. Therefore, Claim 28 is not anticipated by Kishii. Accordingly, Applicants respectfully request withdrawal of the rejection of Claim 28.

III. Claims Rejected Under 35 U.S.C. §103(a)

On appeal, the Patent Office maintained the rejection of Claims 6, 8, 13, 14, 17 and 20-22 under 35 U.S.C. 103(a) as being obvious over Kishii. Applicant respectfully traverses this rejection. Applicants amend Claims 1, 9 and 18.

In order to render a claim obvious, the relied upon references must teach or suggest every limitation of the claim such that the invention as a whole would have been obvious at the time the invention was made to one skilled in the art. In making the rejection, the Patent Office cites Kishii for teaching all of the limitations of these claims except "a second agent of approximately 4% by volume or less of hydrogen peroxide." Decision, page 8. The Patent Office cites Kishii for teaching 2% by volume of hydrogen peroxide and states that 2% by volume meets the necessary requirements. Ibid.

Claims 6 and 8 depend from independent Claim 1 and contain all of the limitations thereof. Thus, the discussion above regarding Claim 1 is equally applicable here. Therefore, Claims 6 and 8 are not obvious Kishii since Kishii fails to teach or suggest at least a second agent is introduced through a polisher during polishing or sprayed over the surface of the metal plug to drive at least one particle off the surface of the metal plug. Accordingly, Applicants respectfully request withdrawal of the rejection of Claims 6 and 8.

Claims 13, 14 and 17 depend from independent Claim 9 and contain all of the limitations thereof. Thus, the discussion above regarding Claim 9 is equally applicable here. Therefore, Claims 13, 14 and 17 are not obvious Kishii since Kishii fails to teach or suggest at least rinsing the

surface of a conductive plug with a solution comprising hydrogen peroxide, wherein rinsing is spraying the solution over the surface of the conductive plug to drive at least one particle off the surface of the conductive plug. Accordingly, Applicants respectfully request withdrawal of the rejection of Claims 13, 14 and 17.

Claims 20-22 depend from independent Claim 18 and contain all of the limitations thereof. Thus, the discussion above regarding Claim 18 is equally applicable here. Therefore, Claims 20-22 are not obvious Kishii since Kishii fails to teach or suggest at least introducing a rinsing solution through a polisher during polishing or by spraying the rinsing solution onto the conductive plug to drive at least one particle off the surface of the metal plug. Accordingly, Applicants respectfully request withdrawal of the rejection of Claims 20-22.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending (1) are in proper form, (2) are neither obvious nor anticipated by the relied upon art of record, and (3) are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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Dated: 9/10/03

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CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope with sufficient postage addressed to Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on September 10, 2003.

Nadya Gordon 9/10/03

Nadya Gordon *Date*